INCREASED SAFETY THROUGH EARLY DETECTION OF WEAR AND CRUCIBLE DAMAGE

Visualisation of temperature distribution on the inner face of the coil of a coreless induction furnace
OCP
Coil and crucible monitoring system

OCP is a patented system for measuring local temperature distributions on the inner face of coils installed in coreless induction furnaces. It reliably identifies wear and crucible damage such as erosions, cracks and metal tongues as well as elevated yoke temperatures. This system also provides reliable monitoring of the sintering process in addition to normal melting and holding operations. OCP can be installed in most any coreless induction furnace.

What crucible defects can the OCP system detect?

Build-up    Crucible tear-off    Metal tongues    Formation of caverns

Benefits

- Increased safety for people and equipment
  Safety is improved by early detection of crucible damage and prevention of coil damage and breakthroughs of molten metal.

- Improved process reliability
  Our OCP is the only system to offer full-scale temperature monitoring already during the sintering process. Presence of moisture does not affect the measurements. Full functionality is ensured even for the melting of zinc alloys and galvanized scrap.

- Increased equipment availability
  Visualisation of the temperature in front of the induction coil helps detect local crucible wear, thus facilitating repairs of local defects and the scheduling of relines.

- Low investment and operating costs
  The OCP sensor cable is embedded in the permanent lining, eliminating additional costs when replacing the crucible. This results in significantly reduced maintenance costs overall, compared to other crucible monitoring systems.

Arrangement of the OCP sensor cable on the inside of the coil of a coreless induction furnace
Special features

- Simultaneous visualisation on PCs, tablets and smartphones
- One evaluation unit monitors up to four furnaces
- Diverse adjustable temperature warning and alarm setpoints
- Traffic light LED status indicator for warning and alarm conditions
- Playback function for review of chronological development of crucible defects
- OCP system can be installed in coreless furnaces of most any makes

Product characteristics

- System for measurement of local temperature distribution in coreless induction furnaces
- Monitoring of coil and yoke temperatures
- Easy integration in machine controllers
- Intuitive user interface
- Designed for implementation in the harsh foundry environment
- Logging of operating data for each crucible campaign
- Fulfils OPC-UA standard for Industry 4.0 connectivity
- Optional cloud-based data storage
- Optional AI-based evaluation of measured data, e.g. to pick out trends indicative of emerging crucible defects
- Customer support also via TeamViewer®
Real-life examples

The following examples illustrate how the coil monitoring data are visualised in the OCP system.

**Crucible tear-off**
The graphs shown here illustrate the emergence of a circumferential crack.

(Left: normal condition, right: crack, circumferential line at elevated temperature)

**Formation of caverns**
The graphs shown here illustrate the formation of a cavern.

(Left: normal condition, right: cavern, bulge at the 1 - 2 o'clock positions)

Animation demonstrating the functioning of the OCP system